BOARD OF COUNTY COMMISSIONERS

AGENDA ITEM SUMMARY

Meeting Date: 16 April 2003 Division: Growth Management

Bulk Item: Yes X No ____ Department: Marine Resources

AGENDA ITEM WORDING:
Approval of a Resolution in support of the Program Management Plan for the Florida Keys Water Quality Improvement Program and the specific wastewater improvement priorities within the document for Monroe County

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ITEM BACKGROUND:
Under Public Law 106-554, Departments of Labor, Health and Human Services and Education, and Related Agencies Appropriations Act of 2001, Section 109, the Army Corps of Engineers (ACOE) is authorized to provide technical and financial assistance to carry out projects for the planning, design, and construction of treatment works to improve the water quality of the Florida Keys National Marine Sanctuary. Under the ACOE policy for development of such projects, the ACOE develop a Program Management Plan (PMP) using a group called the Program Delivery Team (PDT). In large part, the PDT is synonymous with the Intergovernmental Task Force previous acknowledged by the Commission.
The attached Resolution adopts the Final Draft Program Management Plan and the specific priority wastewater improvements for Monroe County found within the document. Staff has fully participated in the development of the PMP and fully reviewed the document and its conclusions and/or recommendations.

PREVIOUS RELEVANT BOCC ACTION:
Approval to participate on the PDT

CONTRACT/AGREEMENT CHANGES:
NA

STAFF RECOMMENDATIONS;
Approval

TOTAL COST: None **BUDGETED:** Yes ______ No ______

COST TO COUNTY: None **SOURCE OF FUNDS:** ______

REVENUE PRODUCING: Yes ______ No X **AMOUNT Per Month** ______ **Year** ______

APPROVED BY: County Atty X OMB/Purchasing NA Risk Management NA .

DIVISION DIRECTOR APPROVAL: [signature] for T.M.
Timothy McGarry, Director of Growth Management

DOCUMENTATION: Included X To Follow ____ Not Required ______

DISPOSITION: ______ **AGENDA ITEM NO.:** T3

BC0304100
04/02/03 2:42 PM

RESOLUTION NO. 2003

A RESOLUTION OF THE MONROE COUNTY BOARD OF COMMISSIONERS ADOPTING THE PROGRAM MANAGEMENT PLAN FOR THE FLORIDA KEYS WATER QUALITY IMPROVEMENT PROGRAM AND THE SECTIONS OF THE PLAN, TABLE 3.3, SPECIFIC TO PRIORITIZING WASTEWATER PROJECTS IN UNINCORPORATED MONROE COUNTY

WHEREAS, Under Public Law 106-554, Departments of Labor, Health and Human Services and Education, and Related Agencies Appropriations Act of 2001, Section 109, the Army Corps of Engineers (ACOE) is authorized to provide technical and financial assistance to carry out projects for the planning, design, and construction of treatment works to improve the water quality of the Florida Keys National Marine Sanctuary; and

WHEREAS, under the ACOE policy for development of such projects, the ACOE must develop a Program Management Plan (PMP) using a group called the Program Delivery Team (PDT); and

WHEREAS, the PDT is currently synonymous with the Intergovernmental Task Force previous acknowledged and approved by the Board of County Commissioners; and

WHEREAS, County staff represented on the PDT have fully participated in the development of the PMP and fully reviewed the document and its conclusions and/or recommendations, and

WHEREAS, the Commission recognizes the value of the PMP in further developing wastewater projects in Monroe County and its use to justify federal wastewater and stormwater project appropriations before Congress; now, therefore

BE IT RESOLVED BY THE BOARD OF COUNTY COMMISSIONERS, MONROE COUNTY, FLORIDA THAT:

Section 1. The Commission adopts the Final Draft Program Management Plan, which are attached as Exhibit A and incorporated into this Resolution.

Section 2. The Commission adopts the specific priority wastewater improvements for unincorporated Monroe County found within the document as Table 3.3, which are attached as Exhibit B and incorporated into this Resolution.

PASSED AND ADOPTED by the Board of County Commissioners, Monroe County, Florida at a regular meeting of said Board held on the 16th day of April, A.D., 2003.

Mayor Dixie Spehar	_____
Mayor Pro Tem Murray Nelson	_____
Commissioner George Neugent	_____
Commissioner Charles "Sonny" McCoy	_____
Commissioner David Rice	_____

BOARD OF COUNTY COMMISSIONERS
MONROE COUNTY, FLORIDA

BY:_____
MAYOR/CHAIR PERSON

(SEAL)

ATTEST: DANNY L. KOLHAGE, CLERK

BY:_____
DEPUTY CLERK

APPROVED AS TO FORM AND
LEGAL SUFFICIENCY
BY_____
ATTORNEY'S OFFICE

Exhibit A

FINAL DRAFT PROGRAM MANAGEMENT PLAN

FINAL DRAFT (2/23/03)

PROGRAM MANAGEMENT PLAN

FLORIDA KEYS WATER QUALITY IMPROVEMENTS PROGRAM

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1.0 INTRODUCTION TO FLORIDA KEYS WATER QUALITY IMPROVEMENTS PROGRAM (FKWQIP)

1.1 Program Description

The Florida Keys (Keys) are a chain of islands extending from the southern tip of the Florida mainland southwest to the Dry Tortugas in portions of both Dade and Monroe counties. Among the many conservation areas in the Keys are Biscayne National Park, several National Wildlife Refuges, and the Dry Tortugas National Park, all of which are encompassed within the larger Florida Keys National Marine Sanctuary (Sanctuary) (Figure 1). The Sanctuary includes 2,800 square nautical miles of nearshore waters that are part of a complex ecosystem that also includes seagrass meadows, mangrove islands, and the only living coral barrier reef in North America. Consequently, water quality is critical to maintaining the marine ecosystem of the Sanctuary.

Importantly, as population and tourism in the Keys have increased over the years, improvements in wastewater treatment and stormwater management practices have not kept pace with this growth. Ongoing research has suggested that this trend has resulted in a significant degradation of water quality in canals and nearshore waters surrounding the Keys and that nutrients commonly found in wastewater and stormwater are one of the major contributors to the decline of water quality.

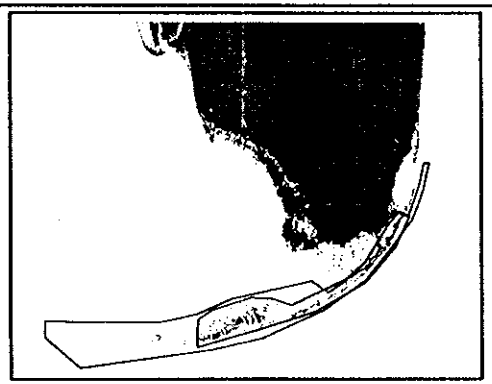
For these reasons, the U.S. Army Corp of Engineers (Corps) proposes to assist local municipalities in Monroe County with the development and implementation of wastewater and stormwater improvements as part of the Florida Keys Water Quality Improvements Program (FKWQIP or Program). The Program is designed to:

- reduce nutrient loading to the Florida Keys National Marine Sanctuary;
- subsequently improve water quality in the Sanctuary; and,
- meet relevant Federal and State regulatory standards.

The FKWQIP is to be accomplished through the implementation of several wastewater and stormwater master plans that have been prepared or are in the process of being prepared for Monroe County and other local municipalities in Monroe County. These plans are designed to provide cost-effective, environmentally sound, and feasible programs for managing pollutants that are now, or have the potential to, adversely impact the water quality of the Keys and the Sanctuary. The FKWQIP is intended to provide the technical and financial assistance for planning, engineering, and construction of wastewater and stormwater treatment improvement projects.

1.2 Program Authorization

Under authority of Public Law 106-554, Departments of Labor, Health and Human Services and Education, and Related Agencies Appropriations Act of 2001, Section 109 and Conference Report H.R. 4577, the Corps is authorized to provide technical and



STATE OF FLORIDA
AND PROGRAM AREA

30 0 30 60 90 120 Miles

Upper Keys

Ocean Reef Club
Rock Harbor
Tavernier
Plantation Key
Windley
Upper Matecumbe
Lower Matecumbe
Long Key
Layton

Middle Keys

Seven Mile Bridge
Marathon
Conch Key
City of Key
Colony Beach

Lower Keys

Big Pine Key
Little Torch Key
Big Torch Key/
Middle Torch Key
Summerland Key
Cudjoe Key
Upper Sugar Loaf
Lower Sugar Loaf
Bay Point
Boca Chica
Stock Island
Key West
Ramrod Key
Bahia Honda Key/
Ohio Key

LEGEND

- Miami
- Program Area
- Approximate Boundary for Florida Keys National Marine Sanctuary
- Upper Keys
- Middle Keys
- Lower Keys

N

5 0 5 10 Miles

		FLORIDA KEYS WATER QUALITY IMPROVEMENTS PROGRAM	**FLORIDA KEYS PROGRAM AREA**	**FIGURE 1**

financial assistance to carry out projects for the planning, design and construction of treatment works to improve the water quality of the Florida Keys National Marine Sanctuary. It should be noted that programs/projects of this nature (e.g., wastewater treatment and stormwater management construction programs) are not in accordance with Administration Program priorities of the U.S. Army Corps of Engineers; however, the Corps routinely undertakes similar non-traditional projects as "work for others."

1.3 Program Location

The Florida Keys are a chain of approximately 800 independent islands located in Monroe county off the southern tip of Florida, representing the most southerly point of the continental United States. The more developed islands are connected by U.S. Highway 1, a 110-mile stretch of roadway extending from Key Largo to Key West. The FKWQIP targets the portion of the Keys connected by U.S. Highway 1, and the remaining developed portion of the Keys. The entire study area is within the Sanctuary and is depicted within Figure 1.

1.4 Program Management Plan

The purpose of this Program Management Plan (PMP) is to establish the framework for development of projects slated for implementation under Federal Authority. The PMP will:

- Outline the specific projects to be initially funded,
- Identify required resources, and
- Establish preliminary budgets and construction schedules.

The PMP will describe the rationale used by the FKWQIP Program Delivery Team (PDT) to prioritize specific wastewater treatment and stormwater management projects contained within various master plans prepared by Monroe County or municipalities within Monroe County.

This PMP is intended to be a dynamic document used to define expected outcomes as well as guide execution and control the FKWQIP. Primary uses of the PMP are to facilitate communication among participants, assign responsibilities, define assumptions, and document decisions. This PMP establishes baseline plans for scope, cost, schedule and quality objectives against which performance can be measured, and to adjust plans as monies are appropriated by Congress. The FKWQIP PDT is responsible for development of the PMP, which will be updated as required throughout the life of the program. Updates are defined as changes to the PMP that occur on a regular basis and do not substantially modify the schedule, cost, or annual management plan for the program. Scheduled revisions, after the completion of key major project development products, will reflect the changes in the project's development resulting from the completion of a decision document or design/acquisition document. The revisions will provide additional levels of detail for upcoming project development and execution of a Project Cooperation Agreement (PCA).

1.5 Program Delivery Team

The Program Delivery Team (PDT) is responsible and accountable for ensuring that effective, coordinated actions combine for successful implementation of the FKWQIP. Membership of the PDT consists of one elected represented from each municipal governmental agency in Monroe County (see Appendix A). A program manager from the Corps (Federal Sponsor) and the non-Federal Sponsor will be assigned to the PDT, to be responsible for the successful implementation of the FKWQIP, and to ensure that projects are planned, designed and constructed consistent with the conditions outlined in the PMP. The PDT is also responsible for budgeting, evaluating procurement options during project planning and execution, identifying potential conflicts and adhering to health and safety standards.

In short, the PDT is an interdisciplinary group formed from the resources of the implementing agencies that develops the products necessary to ensure program success.

1.6 Funding Sources for the FKWQIP

Section 109 allocated $420,000 for the Corps to begin coordination activities with the non-Federal Sponsor. Federal assistance for design and construction of Section 109 projects may be in the form of grants or reimbursements. The non-Federal Sponsor will contribute 35 percent of the total project cost. The non-Federal Sponsor shall receive credit for the reasonable costs of design work completed for the project prior to entering into an agreement with the Government. The non-Federal Sponsor shall receive credit for interest and other associated financing costs incurred as a result of a delay in reimbursement of the Federal share of the design or construction assistance project. The non-Federal Sponsor (SFWMD) will be responsible for providing all lands, easements, rights-of-way, and relocations (LERR) required for the project and for obtaining any necessary permits. The non-Federal Sponsor shall receive credit for the value of such LERRs and the cost of obtaining permits toward its share of project costs, but not to exceed 35 percent of the total costs of the project. The non-Federal Sponsor will be responsible for 100 percent of the operation, maintenance, repair, rehabilitation, and replacement costs associated with a completed construction project; these costs are not part of the cost share.

1.7 Regulatory Requirement

As a result of concerns regarding water quality in the Keys, the *Monroe County Year 2010 Comprehensive Plan* (1997) mandated nutrient loading levels be reduced in the Keys marine ecosystem by the year 2010. In 1998, the Florida Governor issued

Executive Order 98-309 which directed local and State agencies to coordinate with Monroe County to implement the *Year 2010 Comprehensive Plan* and eliminate cesspits, failing septic systems, and other substandard on-site sewage systems.

In 1999 the Florida Legislature set statutory effluent standards and associated compliance schedules for existing and new wastewater treatment system in Monroe County. These standards address treatment for several water quality constituents and require best available technology (BAT) standards for flows less than 100,000 gpd and advanced wastewater treatment (AWT) standards for design flows greater than 100,000 gpd. Adopted water quality standards are listed below.

Table 1.1 Water Quality Standards

Constituent	BAT (mg/L)	AWT (mg/L)
Biological Oxygen Demand (BOD5)	10	5
Total Suspended Solids (TSS)	10	5
Total Nitrogen (TN)	10	3
Total Phosphorus (TP)	1	1

Statutory compliance schedules for wastewater treatment systems in the county are listed below.

- All unknown (or unpermitted) onsite systems in "Cold Spots" and new installations shall be replaced or upgraded with an Onsite Wastewater Nutrient Reduction System (OWNRS) by July 12, 2003.
- All existing onsite systems shall cease discharging or shall be upgraded to an OWNRS by July 1, 2010.
- All existing onsite wastewater treatment facilities must be upgraded to either BAT or AWT effluent standards by July 1, 2010.

In 1998, additional legislation addressed wastewater concerns in the Keys by amending the enabling legislation of the Florida Keys Aqueduct Authority (FKAA), the principal potable water supplier for the Keys. Legislation was passed (F.L. 76-441) to strengthen FKAA involvement in wastewater management for Monroe County. A Memorandum of Understanding (MOU) between Monroe County and the FKAA was signed to "request that the FKAA exercise its authority to purchase, finance, construct, and otherwise acquire and to improve, extend, enlarge, and reconstruct a wastewater collection, transmission, treatment, and disposal system or systems in the Florida Keys." A chronological summary of these and other events relevant to wastewater management in the Keys is presented in Table 1.2.

Table 1.2 Recent Chronology of Regulatory Milestones of Wastewater Management in the Florida Keys

1993	• Initial adoption of Monroe County Year 2010 Comprehensive Plan.
1997	• Monroe County Comprehensive Plan Amended to comply with Florida Statutes. • Administration Commission adopts amendments to Monroe County Year 2010 Comprehensive Plan and established Five-year Work Program (Rule 28-20.100). • MCSWMP begins. • Monroe County established original Identification and Elimination of Cesspools Ordinance. 03-1997; this ordinance was unsuccessful and was later rescinded.
1998	• Governor's Executive Order 98-309 (State and Local Agency Participation in Carrying Out Monroe County Year 2010 Plan). • Florida Legislature amends the enabling legislation of the FKAA (F.L. 76-441) to reinforce the FKAA's involvement in wastewater for Monroe County • Monroe County enters into a Memorandum of Understanding with the FKAA requesting that the FKAA exercises its authority to finance, construct, and operate wastewater systems in the Keys
1999	• Governor Bush and his cabinet amend the 1997 Five-Year Work Program (Rule 28-20.100) to accelerate pace of program, identify "Hot Spots," and initiate cesspool identification outside of "Hot Spot" areas. • Monroe County passes ordinance 031-1999 (Revised Identification and Elimination of Cesspools) to comply with the Governor's revised Five-Year Work Program. • F.L. 99-395 passed (New requirements for all sewage treatment, reuse and disposal facilities, and all on-site systems Monroe County; prohibits new or expanded discharges into surface waters, and require existing surface water discharges be eliminated before July 1, 2006).
Source: Modified from Monroe County, 2000	

In addition to local regulations, Section 303(d) of the Clean Water Act (CWA) requires all states to develop a list of priority surface waters that do not meet applicable water quality standards (impaired waters) after implementation of technology-based effluent limitations. States are require to establish Total Maximum Daily Loads (TMDLs) which designate the maximum amount of a pollutant a water body can assimilate without exceeding water quality standards.

Chapter 99-223, Laws of Florida, sets forth the process by which the 303(d) list is refined through more detailed water quality assessments. It also establishes the means for adopting TMDLs, allocating pollutant loadings among contributing sources, and implementing pollution reduction strategies. Implementation of TMDLs can include any combination of regulatory, non-regulatory, or incentive-based actions necessary to reduce the pollutant loading. Non-regulatory or incentive-based actions may include development and implementation of Best Management Practices (BMPs), pollution prevention activities, and habitat preservation or restoration. Regulatory actions may include issuance or revision of wastewater, stormwater, or environmental resource permits necessary for consistency with the TMDL. Permit conditions may be quantitative effluent limitations or, for technology-based programs, a combination of structural and non-structural BMPs necessary for achieving the desired pollutant load reduction.

Florida is comprised of fifty-two major hydrologic basins, which in turn make up five TMDL groups, each of which undergoes five phases of development, beginning with basin assessment and concluding with actual implementation. The five phases of the study for each group are as follows:

- Phase I Preliminary Basin Assessment
- Phase II Strategic Monitoring
- Phase III Data Analysis and TMDL Development
- Phase IV Management Action Plan
- Phase V Implementation

The Keys are in the fifth group of water bodies to undergo TMDL implementation and are scheduled to begin Phase I in fiscal year 2004-2005 and complete it by fiscal year 2008-2009. Currently, Phase II for water bodies in Group I was completed in April of 2002. The results of the five phases for Group 5 cannot be predicted at this early date and as such, consideration to TMDLs has not been given in this Program.

1.8 Agency Coordination / Cooperation

The FKWQIP is a cooperative effort between the Corps (lead Federal Agency) and the South Florida Water Management District (non-Federal Sponsor). During implementation of Section 109 activities the Corps of Engineers will consult with the Water Quality Steering Committee established under Section 8(d)(2)(A) of the Florida Keys National Marine Sanctuary and Protection Act; the South Florida Ecosystem Restoration Task force established by Section 528(f) of the Water Resources Development Act of 1996; and the Commission on the Everglades established by Executive Order of the Governor of the State of Florida.

1.9 Non-Federal Sponsorship

The South Florida Water Management District (SFWMD) is the non-Federal Sponsor for the FKWQIP. The SFWMD will coordinate and facilitate interaction with the Corps for the municipalities of Monroe County.

1.10 Related Projects

Discussed below are ongoing Federally sponsored projects in the Florida Keys related to the FKWQIP:

FEMA Programmatic Environmental Assessment (EA) of Wastewater Improvements in the Florida Keys - The Federal Emergency Management Agency (FEMA) on September 20, 2002 issued a draft programmatic environmental assessment for four specific projects in the Middle Keys. One project is with the Village of Islamorada and three projects are with the Florida Keys Aqueduct Authority. Under the four projects FEMA will issue approximately $10 M in grants to fund the construction of the subject projects. Matching funds will be provided through the Florida Division of Emergency Management and local government applications. This EA broadly addresses the purpose and need for wastewater improvements in the Florida Keys and presents alternative wastewater management options that might be considered. This EA is considered to be one level below the programmatic Environmental Impact Statement (EIS) under preparation because the EIS is more comprehensive and potentially will fund several more projects. However, extensive information was extracted from this EA for inclusion in the FKWQIP programmatic environmental impact statement, particularly the description of the existing environment.

Florida Keys Carrying Capacity Study. This study was recently conducted to assess the ability of the Florida Keys ecosystem to support continued growth. This study examined past, present, and future impacts to the ecosystem and developed a database and analysis of consequences that may be used to determine the level of land development activities that will avoid further irreversible and/or adverse impacts to the Florida Keys ecosystem. This is accomplished using an interactive, spatially explicit Carrying Capacity Analysis Model (CCAM) that simulates the conditions of land development activities and population growth through time to determine and inventory the impacts on the natural resources and human infrastructure in the Florida Keys.

Comprehensive Everglades Restoration Plan (CERP) Related Projects - The FB&FK FS will comprehensively examine the Florida Bay and Florida Keys marine environments, and the actions and land uses upstream, to determine the modifications that are needed to successfully restore water quality and ecological conditions of the Bay. The study may also include analyses of alternatives for restoration of the marine environment surrounding the Florida Keys, if there are positive impacts on Florida Bay. For example, additional tidal creek restoration projects (beyond those authorized in the Florida Keys Tidal Restoration Project) may be considered.

The study goal, developed by the Project Delivery Team (PDT) for the FB&FK FS, is: "Evaluate Florida Bay and its connections to the Everglades, the Gulf of Mexico and the Florida Keys marine ecosystem to determine the modifications that are needed to successfully restore water quality and ecological conditions of the Bay, while maintaining or improving these conditions in the Keys' marine ecosystem."

Likewise, the PDT has determined that the objectives of the FB&FK FS are:

- Determine the quantity, timing, distribution and quality of freshwater that should flow to Florida Bay and provide recommendations for any modifications of water deliveries that will result from current CERP plans for Everglades wetlands.

- Determine the nutrient sources and loads to the study area, evaluate their impacts to reef and Bay ecosystems, and recommend restoration targets and implementation plans.
- Establish water quality and ecological performance measures.
- Evaluate the effects of restoring historical connectivity between Florida Bay and the Atlantic Ocean.
- Evaluate management alternatives in a holistic manner employing, where necessary, hydrodynamic, water quality and ecological models. The models developed as part of FB&FK FS will be useful for estimating the impacts of restoring the tidal connections at the four sites identified for the FKTR projects.

This Florida Keys Tidal Restoration (FKTR) Project includes the use of bridges or culverts to restore some tidal connections between Florida Bay and the Atlantic Ocean in Monroe County. The four locations are located in the Middle Keys near Marathon and include: 1) Tarpon Creek, just south of Mile Marker 54 on Fat Deer Key (width 150 feet); 2) unnamed creek between Fat Deer Key and Long Point Key, south of Mile Marker 56 (width 450 feet); 3) tidal connection adjacent to Little Crawl Key (width 300 feet); and 4) tidal connection between Florida Bay and Atlantic Ocean at Mile Marker 57 (width 2,400 feet).

The purpose of this project is to restore the tidal connection in a section of the middle Keys that was eliminated in the early 1900's during the construction of Flagler's railroad. Restoring the circulation to areas of surface water that have been impeded and stagnant for decades will significantly improve water quality, benthic floral and faunal communities, and larval distribution of both recreational and commercial species (e.g. spiny lobster) in the near shore waters in the vicinity of these restoration sites.

2.0 PROGRAM SCOPE

2.1 Problems and Opportunities

The Florida Keys is home to a complex and dynamic ecosystem, including the world's third largest coral reef system, and offers a natural beauty that has drawn visitors from around the world. Supporting major fishing and tourist industries, the reef and the entire marine ecosystem are the lifeblood of the Florida Keys, and hence, protecting their existence and vitality is critical to the economic and environmental future of the islands.

Numerous scientific studies have documented the contribution of failing septic tanks and cesspools to the deterioration of canal and nearshore water quality in the Keys (Lapointe *et al.* 1990 and Kruczynski *et al.* 1999). In addition, research has suggested that increased nutrient loadings from wastewater and deterioration of canal and nearshore water quality are major contributors to the decline of water quality in the Sanctuary. Therefore, the primary purpose of the FKWQIP is to improve the water quality in the Sanctuary by the development and implementation of improved wastewater and stormwater treatment in the Keys.

At the Federal level, the Florida Keys National Marine Sanctuary and Protection Act of 1990 directed the U.S. Environmental Protection Agency (EPA) and the State of Florida to develop a water quality protection plan for the Sanctuary. Locally, the Monroe County 2010 comprehensive plan mandates that nutrient loadings be reduced in the marine ecosystem by the year 2010 and that wastewater systems meet more stringent Florida Statutory Treatment Standards. In light of regulatory requirements and in the interest of protecting public health and water quality, the FKWQIP was created.

The marine ecosystem of the Florida Keys National Marine Sanctuary is dependent on acceptable water quality to maintain fragile aquatic habitats. However, as population and tourism within the Keys have increased over the years, improvements in wastewater treatment and management practices have not kept pace with this growth. Ongoing research has suggested that this trend has resulted in a significant degradation of water quality in canals and nearshore waters surrounding the Florida Keys and that nutrients from stormwater discharges and wastewater are one of the major contributors to the water quality decline. This, in turn, is prompting the proposal to improve sewage treatment and stormwater management practices throughout the Florida Keys. This program shall be known as the Florida Keys Water Quality Improvements Program.

The marine ecosystem of the Florida Keys National Marine Sanctuary is dependent on acceptable water quality to maintain fragile aquatic habitats. However, as population and tourism within the Keys have increased over the years, improvements in wastewater treatment and management practices have not kept pace with this growth. Ongoing research has suggested that this trend has resulted in a significant degradation of water quality in canals and nearshore waters surrounding the Florida Keys and that nutrients from stormwater discharges and wastewater are one of the major contributors to the water quality decline. This, in turn, is prompting the proposal to improve sewage treatment and

stormwater management practices throughout the Florida Keys, and presents an opportunity for making some significant contributions to improving the water quality of the Sanctuary and helping to stabilize the economy of the Keys.

2.2 FKWQIP Goals and Objectives

The primary purpose of the FKWQIP is to improve the water quality within the Florida Keys National Marine Sanctuary. During the initial meeting of the PDT (November 22, 2002) a program objective and two goals for the FKWQIP were unanimously adopted by the PDT. These are cited below:

Objective – The FKWQIP will provide an equitable, ecologically sound, and economical implementation strategy for managing wastewater and stormwater to improve water quality of the Florida Keys National Marine Sanctuary.

Goal - The FKWQIP will provide responsive, flexible, and cost-effective solutions that improve wastewater and stormwater management practices throughout the Keys and satisfy the existing and future needs of the community.

Goal – The FKWQIP will address affordability issues, and must satisfy all applicable environmental and regulatory criteria.

2.3 Program Issues

Significant issues that were identified during the NEPA scoping process for preparation of the Programmatic Environmental Impact Statement and discussion with regulatory agencies, stakeholders, and residents of the Florida Keys fall into two general categories:

- Water quality degradation of the nearshore waters in the Sanctuary, and
- Economic equitability for program implementation for all citizens of the Keys

The primary issue associated with the proposed FKWQIP is degraded water quality in the Sanctuary that has resulted from inadequate treatment of wastewater and stormwater in the Keys. Listed below are the significant issues identified during the scoping process:

Issue 1: Water Quality Degradation.. A number of recent scientific studies have documented the contribution of failing septic tanks and cesspools to the deterioration of the Florida Key's canals and nearshore marine water quality. Lapointe et al. (1990) and Lapointe and Clark (1992) found that septic tanks increase nutrient concentrations in groundwater that subsequently discharges into shallow nearshore marine waters, resulting in coastal eutrophication. The studies attribute increased algal blooms, seagrass dieoff, and the loss of coral cover on patch and bank ecosystems to inadequate on-site wastewater management systems. Scientists concur that one of the principle causes sources of water quality degradation in the Sanctuary is the elevated level nutrients in the

surrounding canals and nearshore waters. Nutrients, comprised of nitrogen and phosphorous, are found in high levels in raw sewage and secondary treated wastewater discharges.

A direct connection with septic tank waste disposal and the nearshore marine waters was shown by a viral tracer study in Key Largo. Tracers added to a domestic septic tank appeared in a canal in 11 hours and in nearshore marine waters in 23 hours (Paul et al., 1995a). An ensuing study that used a simulated injection well in Key Largo and an active disposal well in the Middle keys found that viral tracers appeared after short periods of time in groundwater (8 hours after injection) and marine waters (10 hours and 53 hours for Key Largo and the Middle Key, respectively) (Paul et al., 1997). The study indicated that present wastewater practices allow inadequately treated effluent to make its way rapidly to marine waters were it "may contribute to water quality degradation" (Paul et al., 1997). The U.S. Environmental Protection Agency (EPA) has concluded that the magnitude and extent of estimated nutrient loadings from wastewater sources are a strong indication that domestic wastewater sources are regionally substantial (EPA, 1993a)

Issue 2: Facility Siting. Construction of wastewater collection and treatment facilities will require sizeable tracts of land (2-25 acres) to host physical facilities. Vacant parcels of land are scare in the Keys, particularly in the general vicinity of urban areas. The further a treatment facility is located from the area it serves, the greater will be conveyance costs both to construct and operate. As the FKWQIP is implemented, a potential exists that municipalities may be required to exercise their powers of eminent domain to obtain needed lands. This process may displace current residences and reduce tax revenue for smaller municipalities. Another aspect of facility siting that will be important as individual projects are implemented is consideration of potential intrusion unto sensitive lands.

Issue 3: Cesspools. There are an estimated 2,800 illegal cesspools in Monroe County. Monroe County Ordinance 03-1997 established a program to identify and eliminate cesspools, concentrating on the older developed lots where most of the cesspools are suspected to be located. Elimination of cesspools is a significant component of assigning priority to projects in the FDWQIP.

Issue 4: Effluent Disposal Practices. The primary method of disposing treated effluent from wastewater treatment plants in the Florida Keys is through the use of shallow injection wells. Current Florida Department of Environmental Protection (FDEP) rules require these wells to be drilled to a depth of 90 feet and cased to 60 feet, however many of the existing injection wells are less than 90 feet deep, and many have shallow casings, or are entirely uncased, which increases the possibility of effluent leakage. FDEP is requiring many of these non-complying wells to be replaced prior to the issuance of new permits for the treatment facilities.

Issue 5: Impacts on Tourism. The economy and quality of life of the Florida Keys depend upon a healthy marine ecosystem and are negatively impacted by water quality degradation. Tourism. Water related activities, including snorkeling, diving, fishing, and

other beach activities make up 70 percent of the tourism in the Keys, which generates over $1.3 billion per year and supports over 21,000 jobs (English et al. 1996). Poorly treated wastewater presents a public-health risk due to fecal contamination, which in turn can result in beach advisories, decreases in tourism, and commensurate negative impacts on the local and regional economy.

Issue 6: Cost of Implementing FKWQIP. A low and fixed-income population makes up a significant portion of the Monroe County population and affects the ability of the County to fund improvements to wastewater and stormwater facilities. About 12 percent of the population was below the poverty level in 1993 and over 15 percent of the population was over 65 years old in 1996. Many of the standard measures of affordability are based on median family income which do not adequately reflect the abilities of those least able to afford the capital costs associated with the installation of a OWNRS or connecting to a new public sewer system.

In addition, new development in the Keys is limited by the Rate of Growth ordinance (ROGO) that restricts the annual number of new housing initiatives. As a result, the number of new users will increase too slowly to share the cost of new and improved wastewater treatment facilities and therefore decrease the cost over time.

Some users may be subjected to the cost of immediate replacement of individual systems as well as future sewer connections. Users with cesspools or septic tanks may be required to replace their existing systems with an OWNRS system before a public sewer system can be made available to their neighborhood. However, once a public sewer system is available, the user will be required to connect to the public system, adding additional costs to the user. is system, and thus a user would have to pay for both an OWNRS and for connection to the sewer system.

Differences in the cost of implementing centralized wastewater collection and treatment are significant between proposed service areas in the Keys. These differences contribute to potential problems in identifying equitable and affordable means of funding wastewater and stormwater improvements and activities.

2.4 Engineering Considerations

2.4.1 Wastewater Systems

Except for the Cities of Key West and Key Colony Beach where regional wastewater systems are in operation, development of wastewater facilities throughout most of Monroe County has occurred with limited forethought of regional wastewater planning. Without access to any regional wastewater utilities, each developer or homeowner has had to construct private onsite or package wastewater treatment facilities to serve their development or individual home. These conditions have resulted in the present mix of approximately 23,000 onsite systems and 246 small wastewater treatment plants..